Repairing Minolta 16 and Kiev 30 Series 16 mm Cameras

By Mark Hahn

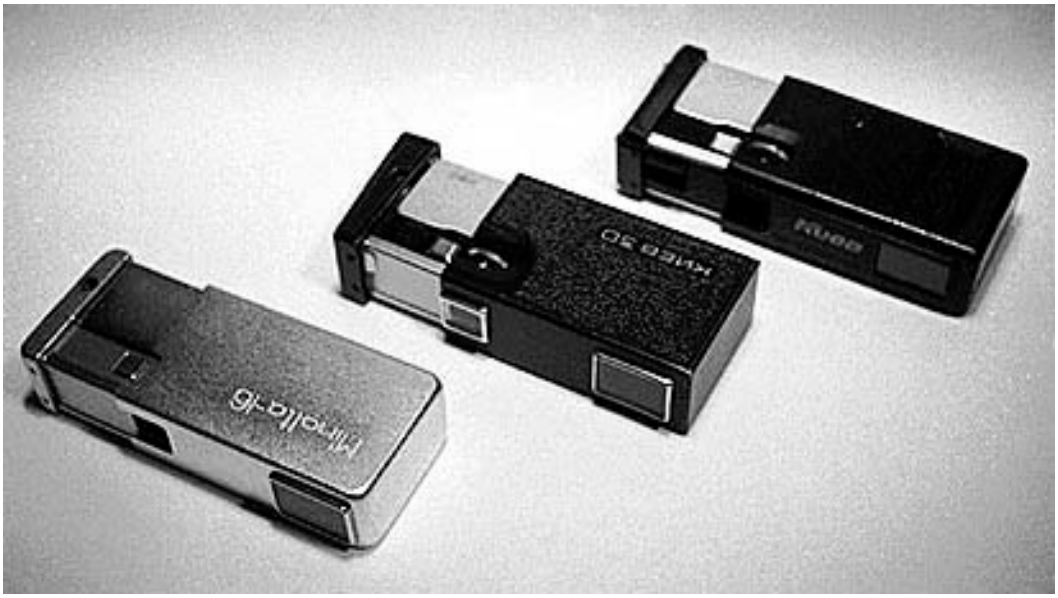

Figure 1. The Cameras

Introduction

The Minolta 16 and Kiev 30 series 16mm cameras are all nearly identical mechanically. They are based on a very simple design that can be easily repaired by most competent individuals. Listed below, along with photos for illustration, are the steps required to disassemble and re-assemble these subminiature cameras.

Disassembling the camera

1. Remove the four screws around the end of the camera and remove the end-cap. Note that the Minolta 16 and Kiev 30 have a shim between the rear of the camera and the end-cap while that the Kiev 303 has a shim that runs the length of the under side of the end-cap.

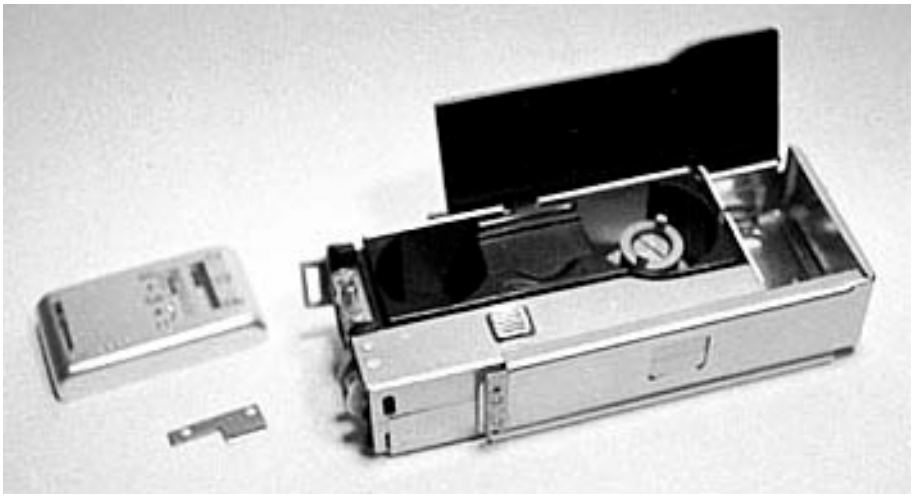

Figure 2. Camera with end-cap removed

2. Slide the camera body out from the outer housing along with the bottom plate which acts as the wind and counter mechanism. Note that the film door must be raised up before doing this step.

3. As the outer housing is removed, the bottom plate will drop off along with the front and rear shims. The shutter release plate will then also be free from the top of the camera body. Put these aside for now.

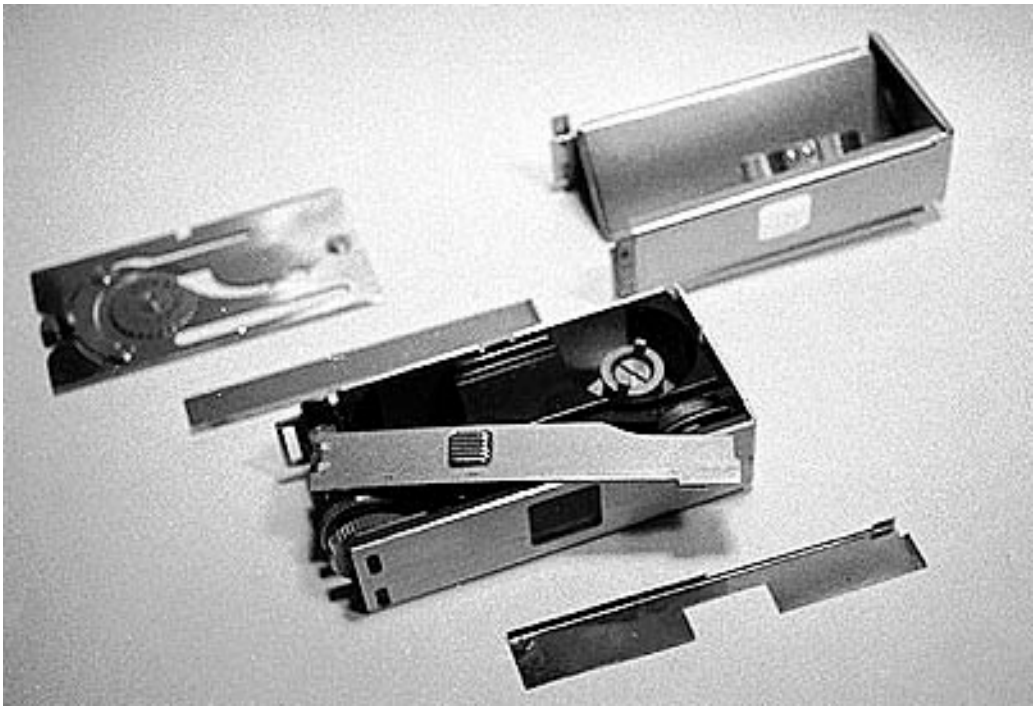

Figure 3. Outer housing removed from camera

4. Remove four screws from the bottom of the camera. The fifth one holds the take-up spindle to the camera and does not need to be removed.

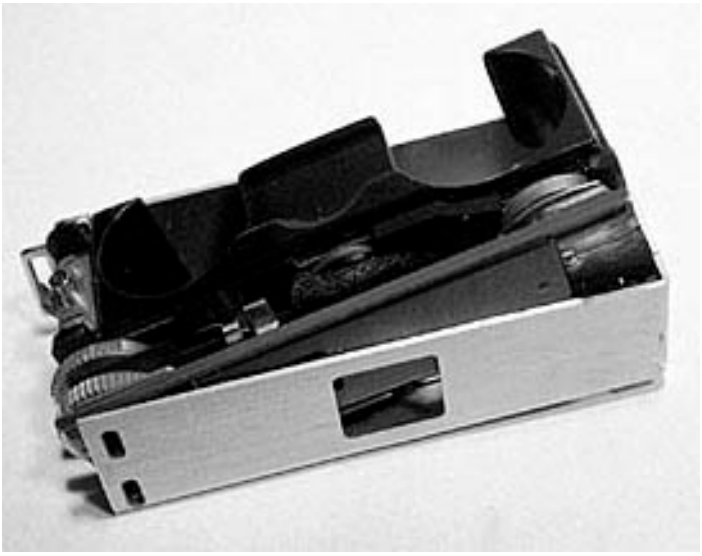

Figure 4. Removing the inner camera components

5. Wiggle the inside of the camera out of the inner shell, it will slide out in two separate pieces, the rear piece houses the lens and the front piece is the shutter assembly. No pieces come loose when you do this step so there is nothing to worry about.

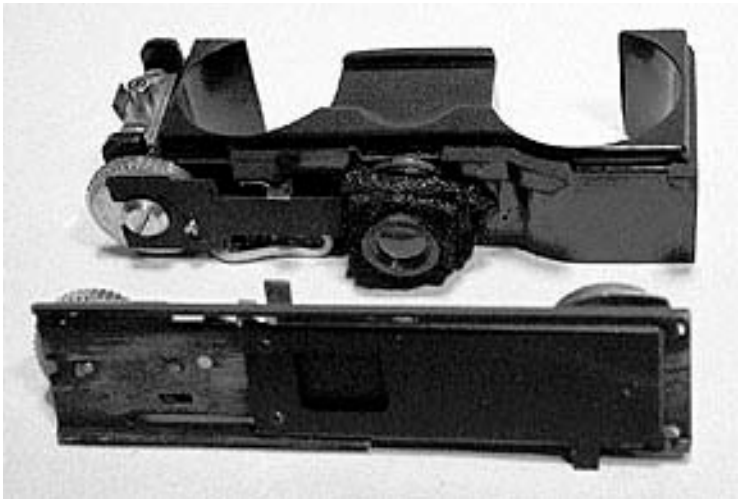

Figure 5. The shutter and rear component of camera

Shutter

The shutter mechanism is extremely simple. It consists of two sliding plates with square holes cut in them. When the camera is cocked, the front plate's hole lines up with the lens and when the shutter is released the rear plate slides behind the front plate making the exposure. The "clock work" is actually only a pin on the rear shutter plate which strikes a cam linked to an inertial brake (a round disk) at the end of its stroke. Shutter speed is adjusted by moving the point at which the inertial brake is engaged during the shutter plate's travel.

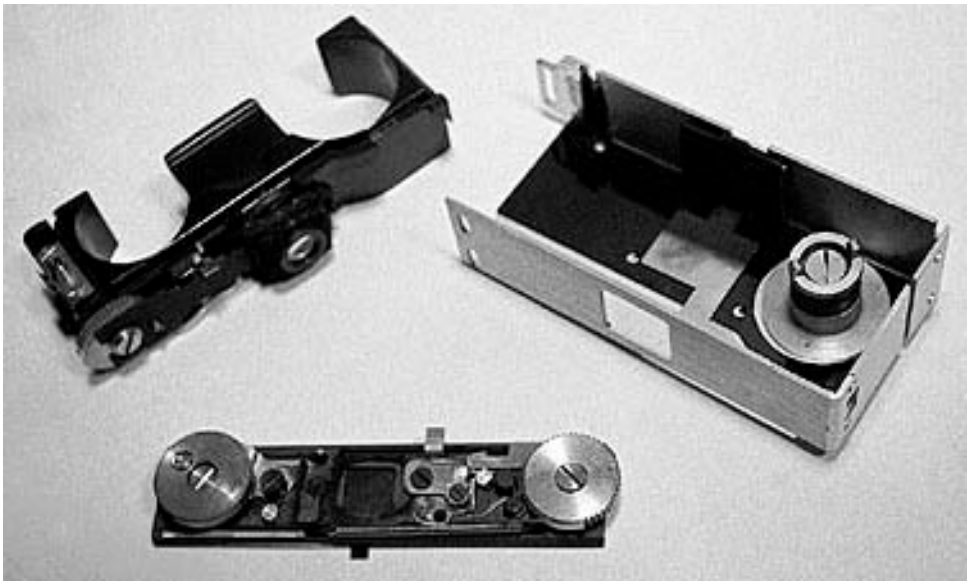

Figure 6. Camera components and rear of shutter assembly

There is very little that can go wrong with this shutter mechanism. Possible areas of trouble would be that the spring that pulls the shutter past the lens could come loose or break, parts may actually wear out and become too rough to function properly in which case you make be able to buff them smooth with a Dremel-like tool, but the most likely cause of failure is probably just the shutter getting jammed up with some debris, the likely source of which would be the disintegrating black sponge rubber surrounding the lens. I cleaned off all the loose sponge with a blast of compressed air. Nothing in this shutter should be lubricated, just clean it out and it should work.

For the more adventuresome camera hackers, it would be very easy to "adjust" the shutter speed by swapping out the shutter spring. With some simple testing you could determine your new shutter speeds. I tested a Kiev 303 that came with a very stiff shutter spring (remember that Ukrainian quality control is almost non-existant) and the top shutter speed tested above 1/500 of a second.

Lens

I have not attempt to adjust my lens, but you can perform a quick and dirty test of the lens by sticking a piece of Scotch tape across the rear of the lens housing and aiming at a light fixture. The tape will act as your ground glass. If the lenses are dirty between the elements you can dismantle the assembly by unscrewing the outer most brass fitting from the front of the lens (based on Kiev 303, but others are probably similar). The front element will come out with the fitting, there is then a brass spacer, behind which is a double concaved lens. With this middle element removed, you can clean the rear element without removing it. To re-assemble the lens, you will have to determine the correct orientation of the middle element by trial and error, just try it the first way, reassemble the lens and view a light fixture on the tape. If the image is sharp the lens is assembled correctly, if not flip the center element, it will then be correct. Note that this lens description comes from servicing a Kiev 303, but the Minolta 16 is in all likelihood identical. The Minolta 16 II is listed as having a more advanced 4-element lens. I have not worked on a 16 II, but I would guess that it is some Tessar derivative lens formulation.

Further

Nearly all parts are interchangeable between the Minoltas and Kievs. The internal workings seem to be of similar quality, though the cosmetic fit and finish of the Minoltas are vastly better than the Kievs. Currently the Minolta 16 routinely goes for as low as $15 dollars on ebay so a good working one would be a perfect parts source for a Kiev or Minolta 16 II. Of the Kiev's fit and finish, the Kiev 30 is vastly superior to the cheap, plastic housed Kiev 303, but a good one of either model can still take excellent photos. The Kievs have range focusing while the Minoltas are fixed focused with auxiliary filters to vary the fixed focus distance. Basic information on these cameras can be found at the Subclub.

Reassembling The Camera

1. Make sure the film gate pressure plate is placed in the inner shell correctly.

2. Holding the two camera pieces together slide them into the inner shell. It is a snug fit, but you don't have to force it.

3. Replace the four screws in the bottom of the camera.

4. Hold the front and rear shims as well as the upper shutter release plate and bottom plate in their proper places with one hand and slide the outer camera shell over the camera and these parts with your other hand (this sounds harder than it is). Note that the lower folds of front and rear shims are to be placed in between the camera and the lower plate.

5. Replace the end-cap and the associated shim.

6. Replace the four screws that secure the end-cap.

7. Camera is again ready to use!

Disclaimer

These instructions are supplied "as-is." The author has made every effort to ensure that they are complete and accurate, but the author takes no responsibility for any damage caused by anyone attempting to follow these instructions. If you are not willing to risk damaging your camera or do not feel confident that you can carry out the steps outlined above please have your camera professionally serviced.

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Note: All photos taken with a Minox IIIs, hand-held with Minopan 25. Thanks to Godfrey DiGiorgi for scanning my negatives.